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(54) Computer able to Receive Broadcasts or Transmissions

(57) A computer comprises data processing means (1) and operably connected thereto, input means (2), output means (3) and data storage means (4). The input means (2) comprise means (21) for receiving and demodulating into data teletext or videotex broadcasts or transmissions and said data processing means (1) comprise means (11) for transferring teletext or videotex data to said data storage means (4) for subsequent access and/or retrieval by said data processing means.

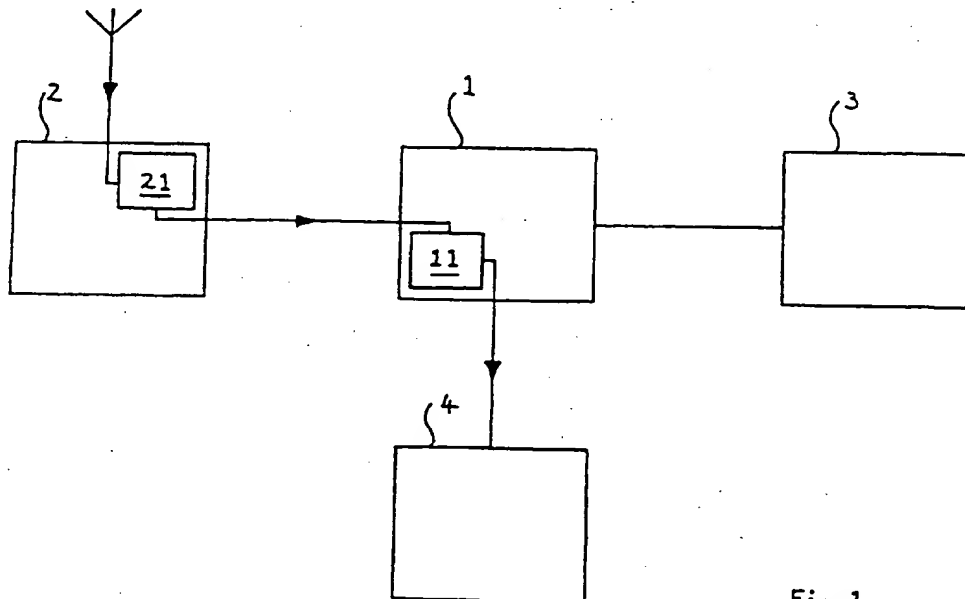


Fig. 1

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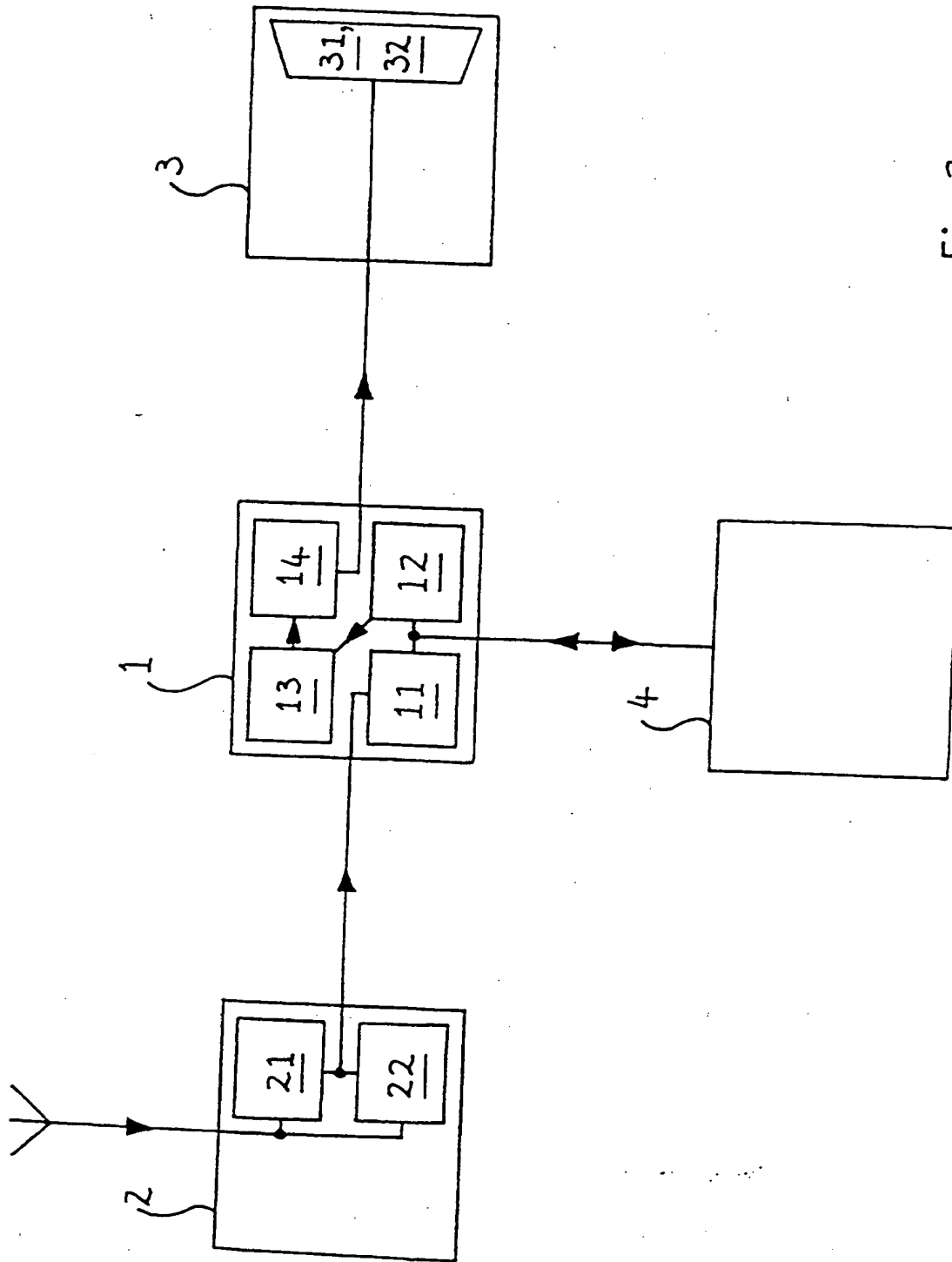


Fig. 2

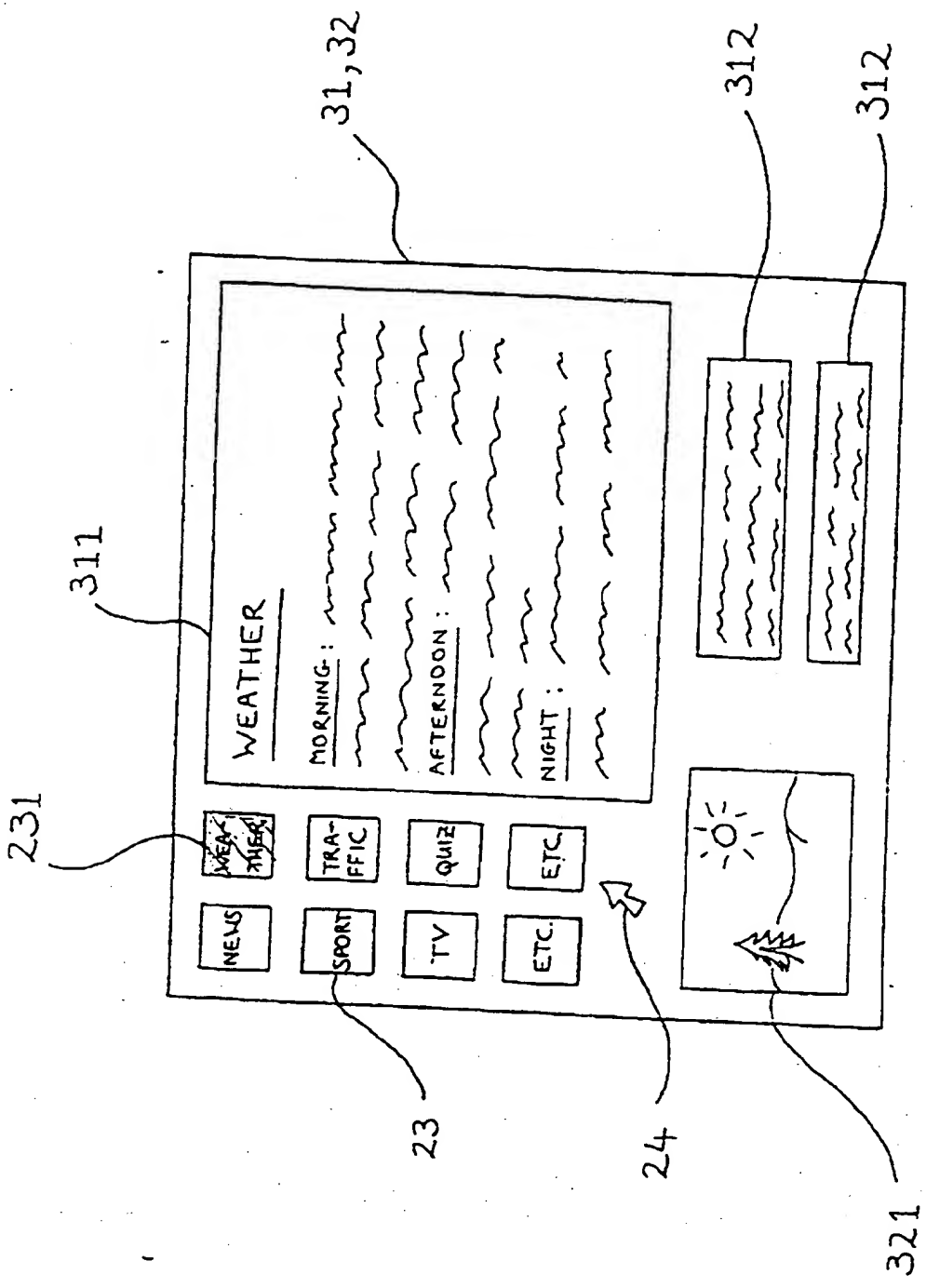


Fig. 4

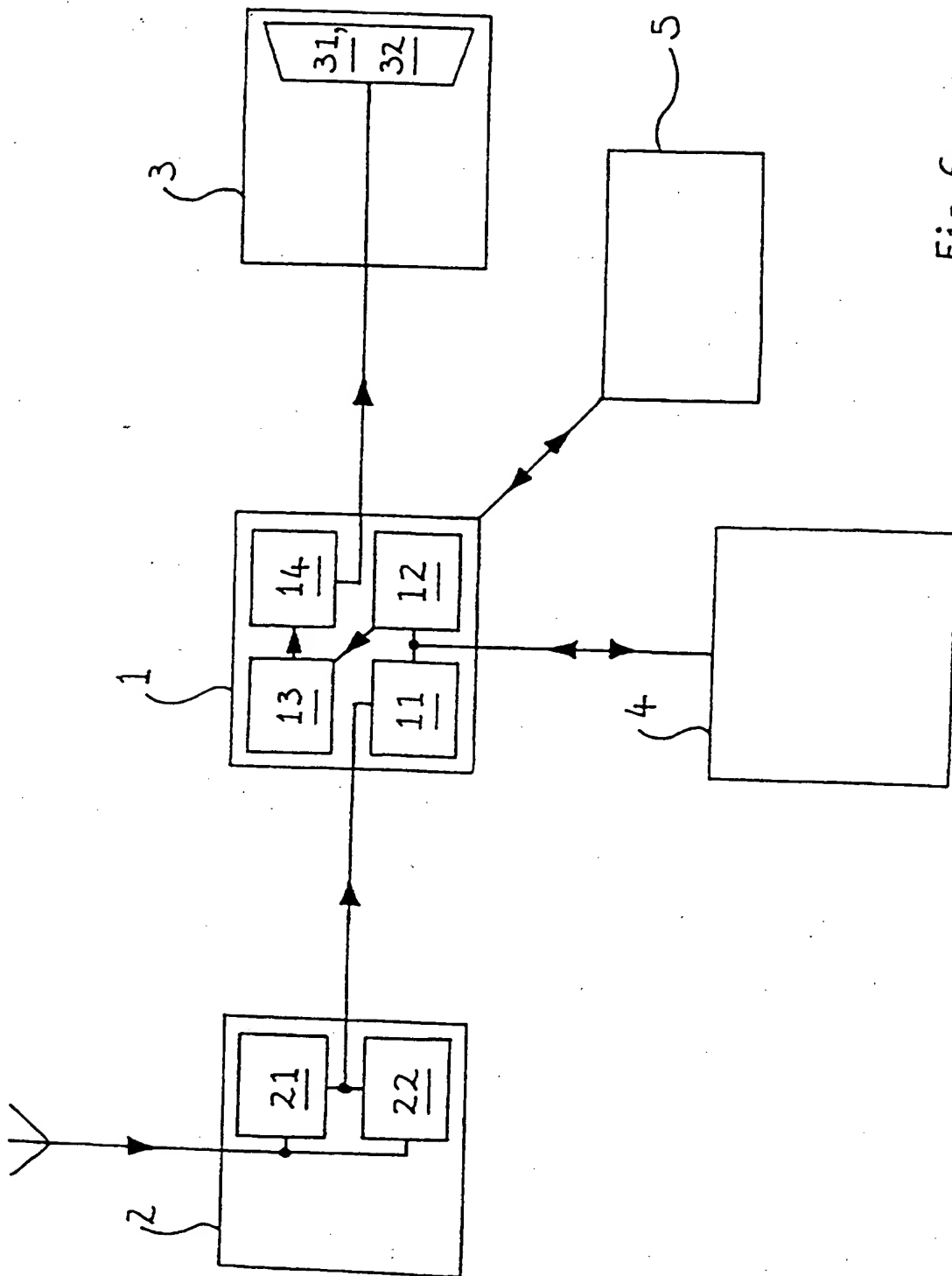


Fig. 6

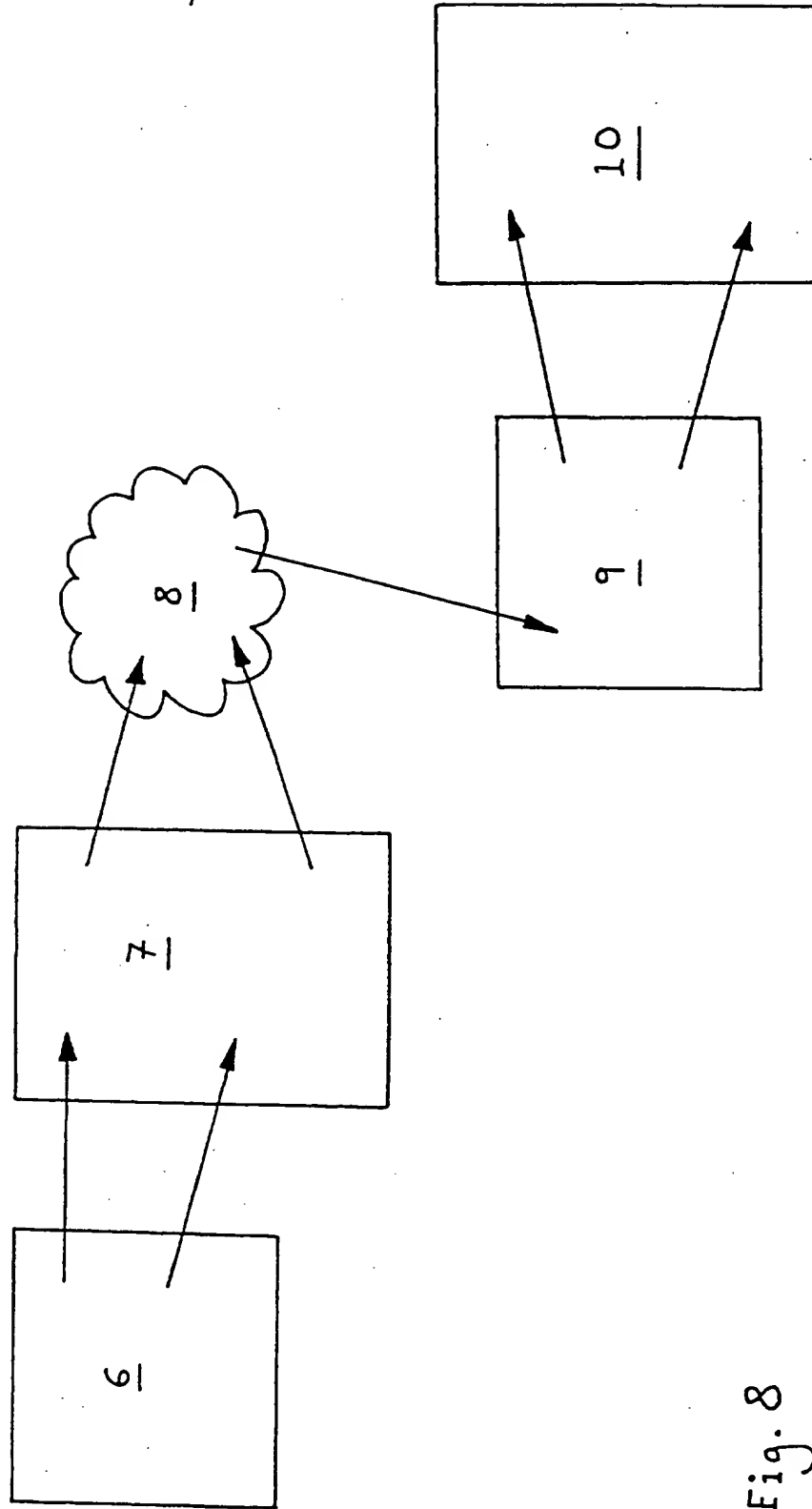


Fig. 8

An example of a known computer able to receive television broadcasts or transmissions which does make some use of its computing capabilities to increase the degree of integration of its operation for computing with its operation for receiving television transmissions, but which fails to address the problems just stated, is a computer able to receive television broadcasts or transmissions, wherein the input means further comprise means for receiving information from the Internet and the output means comprise a screen monitor. In this known computer, the time available from when the image-forming electron beam of the screen monitor reaches the end of one frame of television to when the image-forming electron beam starts to project the next frame of television (this time being known as the vertical blank) is used by the data processing means of the computer to transfer via the means for receiving information from the Internet to the data storage means a web page pertaining to the television programme being displayed on the screen monitor (this transfer being known as vertical blank intercast or VBI). Thus a user of this known computer is able to access a web page pertaining to the television programme being displayed by instructing the data processing means to retrieve the web page from the data storage means for display on the screen monitor.

Many of the examples of problems associated with traditional television sets also exhibited by known computers able to receive television broadcasts or transmissions arise if such computers are operable to receive and demodulate teletext or videotex broadcasts or transmissions. Teletext is a system of broadcasting or transmitting information - typically alphanumeric information - using the spare capacity of existing television channels. For example, in the United Kingdom, teletext services are broadcast or transmitted by the BBC, ITV and Channel 4 under the names of Ceefax, Oracle and 4-Tel, respectively. In the United Kingdom, the spare capacity of existing television channels used to transmit the teletext information is provided by the top four lines of each frame of television projected by the image-forming electron beam.

transmissions to increase the ease of use of such a computer for accessing information from teletext or videotex.

Thus, in one aspect, the present invention provides a computer comprising data processing means and operably connected thereto, input means, output means and data storage means, wherein said input means comprise means for receiving and demodulating into data teletext or videotex broadcasts or transmissions and said data processing means comprise means for transferring teletext or videotex data to said data storage means for subsequent access and/or retrieval by said data processing means.

In another aspect, the present invention provides a method of operating a computer comprising providing said computer with means for receiving teletext or videotex broadcasts or transmissions, demodulating said teletext or videotex broadcasts or transmissions into data and storing said data retrievably in a memory.

In a third aspect, the present invention provides for the use of a computer to receive teletext or videotex broadcasts or transmissions, demodulate said teletext or videotex broadcasts or transmissions into data and store said data retrievably in a memory.

The present invention will be better understood by means of the accompanying drawings, wherein:

Fig. 1 shows schematically the arrangement of a computer according to the invention and its operation for receiving, demodulating and storing teletext;

Fig. 2 shows schematically the arrangement and operation of a computer in a first embodiment of the invention;

Fig. 3 shows schematically the arrangement and operation of the data processing means of a computer in a second embodiment of the invention;

the data stored at times of low computer usage with near-instantaneous retrieval without requiring reception and demodulation at times of high computer usage.

A suitable data storage means 4 is a dedicated cache on a hard disk, in which case the means 11 for transferring the data thereto is a hard disk drive read/write head and control circuitry and/or software therefor, including suitable programming of the CPU in a manner well known to a person skilled in the art.

Referring to Fig. 2, the computer preferably comprises means 12 for retrieving teletext data from the data storage means 4 and conversion means 13 for converting teletext data into a format suitable for displaying at least one page of teletext. In the above-mentioned case where the data storage means 4 is a dedicated cache on a hard disk, the hard disk read/write head, the control circuitry therefor and the previously mentioned CPU between them can provide the means 12 for retrieving teletext data and the conversion means 13 by suitable programming of the CPU. The CPU can also be programmed to provide means 14 for transferring the result of such a conversion to the output means 3.

Fig. 2 also shows schematically a computer in which the output means 3 comprise display means 31 for displaying at least one page of teletext. Most usually, the display means 31 is a screen monitor, in which case the screen monitor can also be used as means 32 for displaying television programmes received by means 22 shown in Fig. 2 for receiving television transmissions or broadcasts. Means 22 are most readily provided by conventional television reception circuitry, preferably integrated with the means 21 for receiving and demodulating teletext or videotex. An example of the integration of the television and teletext reception means 22 and 21 is provided by a printed circuit board bearing a television tuner, a digitizer for demodulating a television signal received by the tuner into data representing successive frames of

broadcasts or transmissions received by the teletext reception means 21 may be transferred directly to the screen monitor without intermediate storage or so that teletext may be monitored via the data transfer means 15 at the same time as being transferred by means 11 to the data storage means 4. In practice, the data transfer means 15 is preferably embodied by a CPU suitably programed to carry out the above functions.

Referring to Fig. 4, a preferred embodiment of the invention has the input means 2 comprising a plurality of selectable icons 23, which may be selected by means of a desktop mouse and its associated pointer 24. The icons 23 and pointer 24 are displayed on a screen monitor in the fashion usual in a graphical user interface of a computer. In this preferred embodiment, such a selectable icon 23 corresponds to a respective page of teletext, whereby selection of one of the icons 23 with the pointer 24 instructs the data processing means 1 to retrieve teletext data from the data storage means 4, this teletext data corresponding to the page of teletext for the icon selected. In Fig. 4, reference numeral 231 represents an icon thus selected. The icons 23 are conveniently labelled pictographically or alphanumerically to indicate the respective page of teletext each icon 23 represents. Such an arrangement has the advantages that a page of teletext may be retrieved near-instantaneously from the data storage means 4 without a user of the computer in this preferred embodiment of the invention needing to know the number or channel of a desired page of teletext and without having to wait for the desired page to be received and demodulated.

Fig. 4 also shows that the screen monitor on which the selectable icons 23 and the pointer 24 are displayed provides the display means 31 for displaying at least one page of teletext and the means 32 for displaying television programmes. A television programme 321 may be displayed in a window on the screen monitor as shown in Fig. 4, or it may be displayed to occupy the full screen or otherwise. A page 311 of teletext

means 25 may be identical with the television and teletext reception means 22 and 21, so that the specifying information is received along with the teletext information itself. Another alternative, as shown in Fig. 5, is that the means 25 for receiving information is an operable connection to the Internet, so that the data processing means 1 may be operated to assign the respective icons to the respective pages of teletext corresponding to these icons from a remote location. In this case, the specifying information is received by the vertical blank intercast (VBI) technique described above. The latter two alternatives have the advantage that a primary (local) user of the computer need not take any action to ensure that the data processing means 1 assigns the correct respective page of teletext to its respective icon or need not even know that such an assignment is taking place.

Both of the latter two alternatives for the means 25 (an operable connection to the Internet or the provision of the means 25 by the television and teletext reception means 22 and 21) may also be used to program the data processing means 1 from a remote location to transfer teletext data to the data storage means 4 at a prespecifiable time, for example in the early morning each day when the computer is unlikely to be used by its primary user. For the avoidance of confusion, the teletext data itself is in this case still received (as always) via the teletext reception means 21. Only the information specifying the time at which the teletext data is to be stored has the possibility of instead being received over the Internet. The means 25 may also be used to program the data processing means 1 from a remote location, to update the teletext data stored in the data storage means 4 at prespecifiable times throughout the day for user-definable pages of teletext, such as news pages. Alternatively or additionally, the computer's primary (local) user may program the data processing means 1 to transfer teletext data to the data storage means 4 at a prespecifiable time or times throughout the day.

means 22 and 21. Such a configuration not shown in Fig. 6 permits the conventional recording of television programmes directly to video, but does not, of course, provide the advantages of the invention described above.)

The means for selecting a part 312 of a page 311 of teletext displayed by the display means 31 may also be used to select from a page 311 of teletext which contains an index or cross-reference to other teletext pages the number of a second page of teletext. In this way, a page of teletext not already assigned to a selectable icon 23 may be accessed with the same speed and ease as for accessing a page already assigned to an icon by programming the data processing means 1 in a manner well known to a person skilled in the art to retrieve teletext data from the data storage means 4 corresponding to the number of the unassigned page of teletext displayed in the part 312 of the page 311 of displayed teletext.

The functions, arrangement and operation of a computer according to the present invention are most easily put into effect by programming a CPU within the data processing means 1 with a 32-bit application program. Fig. 8 shows schematically one example of such a 32-bit application program linked to a 16-bit application program by thunking. Thunking is the process by which a 32-bit application program communicates with a 16-bit computer operating system. A 32-bit self-executing application program 6 links to a set of 32-bit interface library routines 7. A step-down thunk 8 in turn links the 32-bit interface library routines 7 to a set of 16-bit interface library routines 9. The 16-bit interface library routines 9 are linked to 16-bit library routines executable by a computer operating system to implement the functions of the computer in this embodiment of the invention. Such an implementation may be used to support any of various proprietary teletext or videotex services, such as Ceefax, Oracle and 4-Tel in the UK, German TopText and Japanese system.

6. A computer according to claim 5, wherein said data transfer means is operable to transfer television transmissions or broadcasts from said means for receiving television transmissions or broadcasts to said means for displaying television programmes.

7. A computer according to claim 5, wherein said transfer means comprises said conversion means and said means for transferring the result of such a conversion to said output means, and wherein said data transfer means is operable to transfer teletext data from said means for receiving and demodulating teletext broadcasts or transmissions to said means for displaying at least one page of teletext.

8. A computer according to any preceding claim, wherein said input means comprise a plurality of selectable icons, such an icon corresponding to a respective page of teletext, whereby selection of the icon causes said data processing means to retrieve teletext data from said data storage means, to convert said teletext data into a format suitable for displaying said respective page of teletext and to transfer said page to said output means.

9. A computer according to claim 8, wherein said plurality of selectable icons is a subset of a menu of icons stored in said data storage means, said selectable icons being choosable from said menu of icons.

10. A computer according to claim 8 or claim 9, wherein said data processing means is operable to assign such a selectable icon to the respective page of teletext corresponding to that icon.

11. A computer according to claim 10, wherein said input means comprise means for receiving information specifying which page of teletext said data processing means is operable to assign to which selectable icon.

demodulating said teletext or videotex broadcasts or transmissions into data, and storing said data retrievably in a memory.

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19. A method of operating a computer according to claim 18, said method further comprising:

accessing and retrieving said data from said memory, and converting said data into a format suitable for displaying at least one page of teletext.

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20. A method of operating a computer according to claim 18 or claim 19, said method further comprising:

selecting a page of teletext from data in said memory by means of an icon corresponding to said page of teletext, said icon being selectable from a plurality of icons displayed by said computer.

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21. A method of operating a computer according to claim 20, said method further comprising:

providing said computer with means for receiving information specifying which of said plurality of icons corresponds to which page of teletext in the data in said memory.

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22. A method of operating a computer according to any one of claims 18 to 21, further comprising:

programing said computer to receive, demodulate and store data from teletext broadcasts or transmission at a prespecified time.

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23. A method of operating a computer according to any of claims 19 to 22, further comprising:

displaying a page of teletext, and selecting a part of said page of teletext.

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Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): H4F[FBB]; H4T[TDDA]

Int Cl (Ed.6): H04N 5/445, 7/025, 7/08-7/088

Other: ONLINE: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB2283399 A [AMULET ELECTRONICS] See abstract	1, 18 and 26 at least
X	GB2257876 A [SAMSUNG] See abstract	-
X	GB2229070 A [TOSHIBA] See abstract	-
X	WO 86/01359 [PRUTEC LTD] See abstract	-
A	GB2222051 A [TOSHIBA] See abstract	-
A	US5359367 [VIDEOLOGIC] See abstract	-

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.